

## Freeform Search

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*DB=USPT; PLUR=YES; OP=ADJ*

<u>L9</u> L8 same l7	48	<u>L9</u>
<u>L8</u> image forming unit	3498	<u>L8</u>
<u>L7</u> (paper or sheet) supply unit	519	<u>L7</u>
<u>L6</u> image forming unit and l5	303	<u>L6</u>
<u>L5</u> paper adj3 (supply or feed\$3) (unit or device)	2729	<u>L5</u>
<u>L4</u> l3 same tray	63	<u>L4</u>
<u>L3</u> l1 same cover	254	<u>L3</u>
<u>L2</u> l1 same (printer or copier) same tray	362	<u>L2</u>
<u>L1</u> paper with feed\$3 with path	4531	<u>L1</u>

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Term:

13 same tray

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side by side

Hit Count Set Name

result set

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<u>L4</u>	13 same tray	63	<u>L4</u>
<u>L3</u>	11 same cover	254	<u>L3</u>
<u>L2</u>	11 same (printer or copier) same tray	362	<u>L2</u>
<u>L1</u>	paper with feed\$3 with path	4531	<u>L1</u>

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L2: Entry 354 of 362

File: USPT

Jul 14, 1981

DOCUMENT-IDENTIFIER: US 4278344 A

TITLE: Recirculating duplex documents copier

Detailed Description Text (2):

In the recirculating document handler (RDH) 20 disclosed here, individual original documents are sequentially fed from the bottom of a stack of documents placed by the operator face-up in normal collated order in the document storage area or stacking tray 22. They are fed to the imaging station 23, which is the conventional platen of the copier 10, to be conventionally imaged onto a photoreceptor 12 for the production of copies in a generally conventional xerographic manner. The document handler 20 has conventional switches or other sensors such as 24 for sensing and counting the individual documents fed from the tray 22, i.e., counting the number of document sheets circulated. A conventional resettable bail drops to indicate through its associated switch or sensor 26 the completion of each circulation of the complete document set, by sensing that all the documents have been fed out from under it, and then is automatically reset on the top of the stack before the next circulation. The document feeder 20 is selected or adapted to serially sequentially feed the documents, which may be various conventional sizes and weights of sheets of paper or plastic containing information indicia to be copied, on one or both sides, e.g., printed or typed letters, drawings, prints, photographs, etc. A bottom feeder 28 feeds the bottom-most document sheet, on demand, through one of two feed paths, to a platen drive 30 which moves the document into a registration gate 32 over the copier platen 23.

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L2: Entry 340 of 362

File: USPT

Aug 28, 1984

DOCUMENT-IDENTIFIER: US 4468114 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Higher productivity recirculative document copying

Detailed Description Text (2):

In the exemplary N to 1 order recirculating document handler (RDH) 20 disclosed here, individual original document sheets are sequentially fed from a stack of document sheets placed by the operator face-up in normal forward collated order in the document stacking and holding tray 22, i.e. with page 1 on the top of the stack. Document sheets are fed from the bottom of the stack seriatim to the imaging station 23, which is the conventional copying platen of the copier 10, to be conventionally imaged onto a photoreceptor 12 for the production of copies in a generally conventional xerographic manner. The documents are stacked initially, and also restacked automatically during each circulation, in the tray 22 over the platen 23. The document handler 20 has conventional switches or other sensors such as 24 for sensing and counting the individual documents fed from the tray 22, i.e. counting the number of document sheets circulated. A conventional resettable bail or finger drops to indicate through its associated set-counter switch or sensor 26 the completion of each circulation of the complete document set, by sensing that all the documents have been fed out from under it, and then is automatically reset on the top of the stack before the next circulation. The document feeder 20 is adapted to serially sequentially feed the documents, which may be various conventional sizes and weights of sheets of paper or plastic containing information indicia to be copied on one or both sides, e.g. printed or typed letters, drawings, prints, photographs, etc. A bottom feeder 28 feeds the bottom-most document sheet, on demand by the controller, from the stack through one of two selected feed paths described below to a platen transport 30 which moves the document into a registration position, against a registration gate 32, over the copier platen 23, where the side of the document facing the platen 23 is copied.

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File: USPT

Aug 20, 1985

DOCUMENT-IDENTIFIER: US 4536078 A

TITLE: Recirculative document duplex copying

Detailed Description Text (2):

In the exemplary N to 1 order recirculating document handler (RDH) 20 disclosed here, individual original document sheets are sequentially fed from a stack of document sheets placed by the operator face-up in normal forward collated order in the document stacking and holding tray 22, i.e. with page 1 on the top of the stack. Document sheets are fed from the bottom of the stack seriatim to the imaging station 23, which is the conventional copying platen of the copier 10, to be conventionally imaged onto a photoreceptor 12 for the production of copies in a generally conventional xerographic manner. The documents are stacked initially, and also restacked automatically during each circulation, in the tray 22 over the platen 23. The document handler 20 has conventional switches or other sensors such as 24 for sensing and counting the individual documents fed from the tray 22, i.e. counting the number of document sheets circulated. A conventional resettable bail or finger drops to indicate through its associated set-counter switch or sensor 26 the completion of each circulation of the complete document set, by sensing that all the documents have been fed out from under it, and then is automatically reset on the top of the stack before the next circulation. The document feeder 20 is adapted to continually serially recirculate the documents until a selected number of copy sets is made therefrom. The document sheets may be various conventional sizes and weights of sheets of paper or plastic containing information indicia to be copied on one or both sides, e.g. printed or typed letters, drawings, prints, photographs, etc. A bottom feeder 28 feeds from the stack the bottom-most document sheet, on demand by the controller 100, through one of two selected feed paths described below to a platen transport 30 which moves the document over the copier platen 23 into a registration position, against a registration gate 32 where the side of the document facing the platen 23 is copied.

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L2: Entry 297 of 362

File: USPT

Jun 19, 1990

DOCUMENT-IDENTIFIER: US 4934681 A

TITLE: Hybrid output duplex copying system

Detailed Description Text (9):

Referring now further to the exemplary copier 10 of FIG. 1, the copier is adapted to provide either duplex or simplex copy sets copied from either duplex or simplex original documents presented by the RDH 20, or another image input, on various type of copy sheets. Separate copy sheet trays 32 and 32' are provided, for feeding, via path 34, clean copy sheets from either one selectively. A high capacity paper feeder 36 is also shown, at the right hand side here, with a separate sheet input path merging into path 34. A single sheet bypass entry chute is also shown, entering above the feeder 36. The copy sheets are fed from the high-cap feeder 36 or from a selected one of the paper trays 32 or 32' (or others) to a conventional registration system. The registered sheets are fed via path 38 to the transfer station 17, for the conventional transfer of the xerographic toner image of document images from the photoreceptor 12 to one side of the copy sheet. The imaged copy sheets are then conventionally fed to a roll fuser 42 for the fusing of that toner image thereon. These sheets may pass directly on without inversion through gate 48 and output rollers 44 of the copier to a sorter 46, or to a known finishing module (not shown). The output may be precollated, in which case only a single output stacking tray and/or finisher need be used, and no sorter is required, as is well known.

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File: USPT

Dec 6, 1994

DOCUMENT-IDENTIFIER: US 5371573 A

TITLE: Image forming apparatus providing a sheet tray in the image forming section when the stacking device is filled

Detailed Description Text (28):

In operation, sheet P discharged through gate 62 of laser printer 1 is guided through the first path to sorting gate 134. Sorting gate 134 guides sheet P to paper-discharging rollers 130 or into the second path. Sheet P guided to paper-discharging rollers 130 is discharged onto sheet tray 29 by paper-discharging rollers 130 rotating in a forward direction, or is guided toward sheet tray 29 for the distance equal to the sheet length by paper-discharging rollers 130 rotating in a forward direction and then back to sorting gate 134 by paper-discharging rollers 130 rotating in a reverse direction. Sheet P, thus supplied to sorting gate 134, is guided into the second path and fed downward into paper-feeding section 14.

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Entry 222 of 362

File: USPT

Oct 10, 1995

DOCUMENT-IDENTIFIER: US 5457524 A

TITLE: Dual path sheet feeder

Abstract Text (1):

A dual path sheet feeder is disclosed including a dual mode sheet feeding tray for selectively delivering sheets from a sheet feeding module to either a printer processing module or to a finishing module, wherein a movable gate situated adjacent to the sheet feeding tray is provided for directing sheets along a predetermined path of travel. The movable gate is selectively positionable between a first position for directing the sheets to the processing module to produce copy sheets prior to delivering the copy sheets to the finishing module and a second position for directing the sheets directly to the finishing module to bypass the processing module to provide an insert sheet. The dual path sheet feeder is contemplated for use in conjunction with a high speed electrostatographic printing machine for providing flexible paper supply options without the additional burden of providing supplemental dedicated sheet feeding trays.

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L2: Entry 192 of 362

File: USPT

Dec 2, 1997

DOCUMENT-IDENTIFIER: US 5692744 A  
TITLE: Paper feeder

Brief Summary Text (5):

An image forming apparatus such as a copier or a printer is provided with a paper feeder for successively one by one conveying sheets of paper held in a paper tray to a transfer unit, feeding the paper with a toner image transferred thereon to a fixing unit and delivering it to a paper delivery or take-off device. The paper feeder has guide members for controlling a paper conveying path on both sides of the paper conveying path and a plurality of conveying roller pairs opposed to and brought into contact with the paper conveying path. The paper feeder feeds the paper in a predetermined direction under the rotation of each conveying roller pair.

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File: USPT

Mar 17, 1998

DOCUMENT-IDENTIFIER: US 5727784 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Paper feeder

Brief Summary Text (5):

An image forming apparatus such as a copier or a printer is provided with a paper feeder for successively conveying sheets of paper held within each of paper trays to a transfer unit one by one, feeding the paper with a toner image transferred thereon to a fixing unit and delivering it to a paper delivery or take-off device. In the paper feeder, a paper conveying path is formed by two guide members for supporting a sheet of paper from both surfaces thereof. Further, a plurality of roller pairs for feeding out the paper are provided so as to deliver the paper in a predetermined direction under their rotation.

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L2: Entry 99 of 362

File: USPT

Sep 19, 2000

DOCUMENT-IDENTIFIER: US 6122468 A

TITLE: Method and apparatus for forming toner images

Detailed Description Text (44):

The tandem full-color printer having the above construction is capable of outputting a full-color image at a far higher speed than a full-color image forming apparatus including only one photoconductive element. In a tandem full-color printer having photoconductive elements arranged horizontally, the length of a paper transport path and therefore a first print time cannot be reduced unless a paper feed tray and a printing tray are caused to protrude from the printer sideways, increasing the area to be occupied by the printer. As shown in FIG. 14 (using the same reference numerals as FIG. 11), to reduce the area to be occupied by the printer, a paper must be conveyed from the paper feed tray 110 to the printing tray 117 along a generally S-shaped transport path. This increases the length of the transport path and therefore the first print time.

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File: USPT

Feb 13, 2001

DOCUMENT-IDENTIFIER: US 6186496 B1

TITLE: Optimized passive gate inverter

Brief Summary Text (33):

U.S. Pat. No. 5,710,968 discloses a dual path sheet feeder including a bypass transport loop and a main transport loop for selectively delivering sheets from a sheet feeding module to either a printer processing module or to a finishing module, wherein a movable gate situated adjacent to the bypass transport loop is provided for directing sheets along a predetermined path of travel. The movable gate is selectively positionable between a first position for directing the sheets through the main transport loop to the processing module to produce copy sheets prior to delivering the copy sheets to the finishing module and a second position for directing the sheets through the bypass transport loop to deliver sheets directly to the finishing module, circumventing the processing module. The dual path sheet feeder is contemplated for use in conjunction with a high speed electrostatographic printing machine for providing flexible paper supply options without the additional burden of providing supplemental dedicated sheet feeding trays.

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L2: Entry 83 of 362

File: USPT

Jun 12, 2001

DOCUMENT-IDENTIFIER: US 6244585 B1

TITLE: Sheet processing apparatus with switching among plural types of paper

Detailed Description Text (6):

Laser recording portion 32 includes a paper conveyance portion 50 for conveying paper, a laser writing unit 46 and an electrophotographic processing unit (image processing unit) 47. Paper conveyance portion 50 comprises: feed rollers, conveyance rollers, a conveyance belt and discharge rollers which define a paper feed path from a manual feeder tray 54 and paper cassettes 51 and 52 by way of electrophotographic processing unit 47 to a post processing unit 34 arranged on the side of the sheet discharge port of copier 30.

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L2: Entry 50 of 362

File: USPT

Aug 13, 2002

DOCUMENT-IDENTIFIER: US 6430986 B1

TITLE: Sensor alignment for a document processing apparatus

Brief Summary Text (5):

Referring to FIG. 1, there is shown a perspective view of a document processing apparatus 10. The apparatus 10 could be any suitable type of document processing apparatus, such as a copier, a facsimile machine, a scanner, a computer printer, or a multifunction device having two or more functions. Referring also to FIG. 2, in this embodiment the apparatus 10 is a copier which includes an original document feed system 11 and a copy document feed system 13. A scanner or image obtainer 12 is provided under a transparent glass platen 15. The scanned information from the scanner 12 of information on an original document fed through the original document feed system 11 is imaged onto paper selected from paper trays 14 or 16. Paper selected from either of the paper trays 14, 16 is moved by the copy document feed system 13 through the apparatus 10 by means of various belts 18 and rollers 19 schematically depicted in FIG. 2. The original document feed system 11 also comprises suitable belts and rollers. Throughout the paper paths of the two feed systems 11, 13 there are mechanical sensors 30, 50 and optical sensors 20, 40 to indicate where and when a piece of paper is located. The sensors are initially aligned and tested during manufacture and re-aligned and tested as required by field service technicians throughout the life of the apparatus.

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L2: Entry 42 of 362

File: USPT

Nov 19, 2002

DOCUMENT-IDENTIFIER: US 6483598 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Image processing device

Detailed Description Text (7):

The cassettes accommodate piles of different format-size sheets of recording paper respectively. When a user selects a desired cassette, paper sheets of the desired format size will be fed periodically one by one from the top of the pile in the cassette and transferred along a paper feeding path 35 to an image forming portion of the laser printer section 12. The RADF 16 is a document feeding device that automatically feeds originals one by one at due time-intervals from a plurality of original documents put on a document feeding tray to the document setting table 15 of the scanner unit 20.

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L4: Entry 11 of 63

File: USPT

Jan 22, 2002

DOCUMENT-IDENTIFIER: US 6340157 B1

TITLE: Recording apparatus capable of recording images on both sides of recording paper

Detailed Description Text (7):

Top unit 4 is attached to the top of main body unit 1. Top unit 4 rotates on rotation shaft 31 to enable the top of main body unit 1 to be opened. Meanwhile, paper path 32 is formed inside top unit 4. Top unit 4 has cover 33 to open an upper side of paper path 32. Cover 33 rotates on rotation shaft 34. The upper surface of cover 33 is used as discharge paper tray when the automatic both-side unit is installed. An inlet of top unit 4 is in the vicinity of a discharge opening of main body unit 1. Switching pawl 35, provided at the inlet of top unit 4, delivers recording paper discharged from the discharge opening of main body unit 1 to a discharge paper tray side or a paper path 31 side (automatic both-side unit side). The recording paper delivered to the discharge paper tray side is discharged to the discharge paper tray (upper surface of cover 33) with discharge roller 36. The recording paper delivered to the paper path 32 side is fed to a rear unit 3 side with feed roller 37.

Detailed Description Text (64):

Top unit 4 is provided with discharge sensor S1 before, in the feeding direction, discharge roller 36 that discharges the recording paper taken in top unit 4 to the discharge tray side. Discharge sensor S1 detects the recording paper discharged to the discharge tray side. Moreover passing sensor S2 is located after, in the feeding direction, feed roller 37 on paper path formed in top unit 4. Further passing sensor S3 is provided before, in the feeding direction, feed roller 40 on paper path 38 formed in rear unit 3. In inversion unit 2, inversion sensor S4 is provided before forward-reverse roller 46 on draw-in path 45, and outlet sensor S5 is provided directly after feed roller 53a on inversion path 47, in the feeding direction. In addition, S8 is a sensor to detect whether cover 41 is opened or closed, and S9 is a sensor to detect whether cover 33 is opened or closed.

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